

## EARMUFF STRUCTURE FOR HEADSET OR EAR PROTECTOR

### FIELD OF THE INVENTION

5 The present invention relates to an earmuff structure for headset or ear protector, and more particularly to an earmuff structure that includes an integrally injection molded speaker mounting plate allowing quick assembling of batteries and a speaker thereto. The  
10 speaker mounting plate is provided at a rear surface with wall portions that together with a foam located behind the speaker define a space functioning like a cabinet, creating clear and high quality stereo sounds output from the speaker in the earmuff.

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### BACKGROUND OF THE INVENTION

Figs. 1 and 2 shows a conventional earmuff structure for headset or ear protector. The conventional earmuff  
20 structure includes two earmuff shells 1 and 2, battery conducting electrode plates 11 that are directly welded to a circuit board 3 fixed in each of the earmuff shells 1, 2, and two speakers 4, each of which is fitted on a considerably small speaker mounting seat 41 having  
25 two hooking heads 42 provided at two lateral sides thereof and foams 40 provided at predetermined

positions. The speaker mounting seat 41 is then fixed to two lateral sides of the circuit board 3 via the hooking heads 42 that provide some extents of elasticity, so that the speaker 4 is assembled to the circuit board 3. The above assembling manner has the following disadvantages:

1. The battery conducting electrode plates 11 must be welded to the circuit boards 3 in the earmuff shells 1, 2, and the speakers 4 are assembled to the circuit boards 3 by engaging the hooking heads 42 of the speaker mounting seats 41 with two lateral sides of the circuit boards 3. It is difficult and time-consuming to proceed with the welding and the assembling of the electrode plates 11 and the speakers 4 to the circuit boards 3.
2. The earmuff shells 1, 2 have quite small interior space, and the battery conducting electrode plates 11 welded to the circuit boards 3 are very close to two sides of the earmuff shells 1, 2. It would be very inconvenient to change batteries 5 in the small space of the earmuff shells 1, 2.
3. The speakers 4 are assembled to the circuit boards 3 by very tightly engaging the hooking heads 42 of

the speaker mounting seats 41 with two lateral sides  
of the circuit boards 3. It is uneasy to disengage  
the speaker mounting seats 41 from the circuit boards  
3 when the speakers 4 are failed and require  
5 replacement.

4. The speakers 4 assembled to the circuit boards 3 are  
located in an open space in the earmuff shells 1,  
3. Therefore, the speakers 4 do not output clear  
10 and high quality stereo sounds.

#### SUMMARY OF THE INVENTION

A primary object of the present invention is to provide  
15 an earmuff structure for headset or ear protector. The  
earmuff structure includes a standardized speaker  
mounting plate that is detachably screwed to internally  
threaded seats on an inner surface of an earmuff shell  
after a speaker is assembled to the speaker mounting  
20 plate. Therefore, the earmuff can be more quickly and  
conveniently assembled.

Another object of the present invention is to provide  
an earmuff structure for headset or ear protector. The  
25 earmuff structure includes a speaker mounting plate  
having wall portions projected from a rear surface

thereof by a predetermined height, so that the wall portions cooperate with foams located behind a speaker mounted on the speaker mounting plate to define a space functioning like a cabinet, creating clear and high quality stereo sounds output from the speaker in the earmuff.

A further object of the present invention is to provide an earmuff structure for headset or ear protector. The earmuff structure includes a speaker mounting plate that is screwed to internally threaded seats on an inner surface of an earmuff shell without forming any projections on the speaker mounting plate. The flat and wide speaker mounting plate therefore allows convenient replacement of batteries of the earmuff.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein

Figs. 1 and 2 are partially exploded perspective views of a conventional earmuff structure for headset or ear

protector;

Fig. 3 is an exploded perspective view of an earmuff structure for headset or ear protector according to  
5 the present invention;

Figs. 4 and 5 are partially assembled perspective views of the earmuff structure of the present invention; and

10 Fig. 6 is a fully assembled perspective view of the earmuff structure of the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

15 Please refer to Fig. 3 that is an exploded perspective view of a earmuff structure for headset or ear protector according to an embodiment of the present invention, and to Figs. 4 and 5 and 6 that are partially and fully assembled perspective views, respectively, of the  
20 earmuff structure of Fig. 3.

The earmuff structure includes two earmuff shells 6, 7, and two speaker mounting plates 8, 9, which may be integrally formed by way of injection molding and  
25 respectively have a hole 81, 91 formed at a central area thereof for receiving a speaker 4 therein. The

speaker mounting plates 8, 9 are provided at respective rear side with wall portions 82, 92 having predetermined heights. The wall portions 82 on the speaker mounting plate 8 are two laterally spaced walls formed from outer  
5 bottom surfaces of two rearward projected battery compartments 83, 84 at two sides of the central hole 81.

The speaker mounting plates 8, 9 are also provided at  
10 predetermined positions with two rearward extended and internally threaded bars 85, 93, respectively, to correspond to bores 31, 32 formed on two circuit boards 3 in the earmuff shells 6, 7, so that the speaker mounting plates 8, 9 are screwed to the earmuff shells 6, 7 by  
15 screws 86 extended through the threaded bars 85, 93 on the speaker mounting plates 8, 9 and the bores 31, 32 on the circuit boards 3 into internally threaded seats 61 correspondingly formed on inner surfaces of the earmuff shells 6, 7. With these arrangements, it  
20 would be very easy to dismount the speaker mounting plates 8, 9 from the earmuff shells 6, 7 for the purpose of assembling and disassembling the speakers 4 to and from the central holes 81, 91.

25 The two battery compartments 83, 84 are formed on a front surface of the speaker mounting plate 8, and have

battery conducting electrode plates pre-positioned therein. The battery conducting electrode plates and the speakers 4 are electrically connected to the circuit boards 3 by plugging terminals of conductors into  
5 corresponding sockets on the circuit boards 3. Therefore, it is not necessary to directly weld the battery conducting electrode plates to the circuit boards 3.

10 When the speaker mounting plates 8, 9 are assembled to the internally threaded seats 61 on the inner surfaces of the earmuff shells 6, 7, two foams 87 separately located behind the two speakers 4 cooperate with the wall portions 82, 92 rearward projected from the speaker  
15 mounting plates 8, 9 by predetermined heights to define two spaces around the speakers 4 to serve as two cabinets, as can be seen in Fig. 3, creating clear and high quality stereo sounds output from the speakers 4 in the earmuff shells 6, 7.